



# CHAPTER EIGHT: TRANSPORTATION

## Introduction

This chapter evaluates Rockingham County's transportation network over a 20-year period. The Virginia Department of Transportation (VDOT) maintains all roadways in Rockingham County in coordination with the County. VDOT emphasizes the importance of identifying transportation projects based on how well a project addresses transportation system performance measures for congestion, safety, and other indicators. This chapter identifies the County's critical transportation needs through a data-driven approach that considers existing conditions, future impacts of growth on the transportation network, and system performance measures.

Virginia Code §15.2-2223 requires that VDOT review the transportation section in a comprehensive plan to ensure that the transportation planning process identifies transportation projects based on system performance measures. As a result, the State Code requires that this chapter include the following:

- Existing transportation network;
- Planning assumptions affecting the transportation network;
- Current and future transportation needs; and,
- Recommended transportation projects.

In addition to system performance measures, VDOT awards funding for transportation projects in part based on how well projects support the goals and objectives documented in VTrans. VTrans is Virginia's statewide transportation plan developed by VDOT's Office of Intermodal Planning and Investment (OIP). The plan focuses on identifying transportation needs to inform state transportation policy, planning, and grant funding.

This chapter also includes documented transportation needs and projects from previous transportation studies, most notably the Harrisonburg-Rockingham Metropolitan Planning Organization (HRMPO) Long Range Transportation Plan (LRTP), the VDOT US 33 Arterial Management Plan, the Rockingham County Stone Spring Urban Development Area (UDA) Plan, the Rockingham County Bicycle and Pedestrian Plan, and the comprehensive plans of Harrisonburg and each of the seven towns in the County.



## ROCKINGHAM COUNTY, VIRGINIA COMPREHENSIVE PLAN UPDATE

### Regional Context

Rockingham County is part of a regional transportation network that includes the City of Harrisonburg and the towns of Bridgewater, Broadway, Dayton, Elkton, Grottoes, Mount Crawford, and Timberville. The HRMPO is the regional transportation planning and advisory organization comprised of senior staff and elected officials from the County, the City of Harrisonburg, and the towns of Bridgewater, Dayton, and Mount Crawford. The HRMPO's Harrisonburg-Rockingham urbanized area is shown on Map 8.1.

[Map 8.1 | HRMPO Region]

The HRMPO develops the Long Range Transportation Plan (LRTP), which establishes regional transportation priorities within the Harrisonburg-Rockingham urbanized area. The Central Shenandoah Planning District Commission (CSPDC) Rural Transportation Program assists with transportation planning for County areas outside of the HRMPO boundary. VDOT provides technical assistance for each program.

### Socio-Demographic Considerations

Federal guidance emphasizes the importance of providing access to affordable and reliable transportation to everyone, and eliminating transportation-related disparities faced by historically-disadvantaged communities. The United States Department of Transportation (USDOT) adopted an Environmental Justice<sup>1</sup> policy, Justice40<sup>2</sup> to address disproportionate and adverse social, economic, and environmental impacts on minority, low-income, disabled, elderly, and low-English proficiency populations, which are populations that face barriers to accessing transportation. For example, senior populations have unique transportation needs that include a decreased reliance on vehicles due to health, economic situation, or personal preferences.

At the statewide level, the VTrans statewide transportation planning principle is to “consider the needs of all communities,” and to also assess the long-term impact of changing demographics on the transportation network. In the spirit of this principle, a geographic analysis was conducted based on 2020 U.S. Census data to identify concentrations of traditionally underserved populations that confront unique transportation challenges.

Based on federal Environmental Justice guidance, underserved populations include low-income, senior, minority, limited-English proficiency, and zero-car households based on U.S. Census designations<sup>3</sup>. Datasets and mapping were assembled for each demographic group.

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<sup>1</sup> Environmental Justice is the “fair treatment and meaningful involvement of all people regardless of race, color, national origin, or income with respect to the development, implementation, and enforcement of environmental laws, regulations, and policies.” The policy is based on the Civil Rights Act of 1964, and other federal acts and executive orders.

<sup>2</sup> Justice40 Initiative was created through Executive Order 14008. For the US DOT, Justice40 is an opportunity to address gaps in transportation infrastructure and public services by working toward the goal that at least 40% of the benefits from many of our grants, programs, and initiatives flow to disadvantaged communities.

<sup>3</sup> U.S. Census definitions:

- Low-income: Median household income is at or below the annual Department of Labor poverty guidelines.
- Minority: Asian, American Indian, Black, Hispanic or Latino, Native Hawaiian and Other Pacific Islander.
- Senior: Individuals aged 65 and over.



## ROCKINGHAM COUNTY, VIRGINIA COMPREHENSIVE PLAN UPDATE

The County has two census blocks<sup>4</sup> with a high concentration of multiple underserved populations:

- Census block group along US 11 between Harrisonburg and I-81 Exit 251: minority population between 31-47 percent, poverty rate between 23-45%, and limited English proficiency between 11-27% of the population;
- Census block group along Route 42 between Harrisonburg and Dayton: minority population between 31-47 percent, and limited English proficiency between 11-27% of the population.

Two other census block groups have high poverty rates between 23 – 45%: one area is east of Grottoes, and another area is southeast of Harrisonburg, which is likely due to a high university student population.

The senior population is concentrated in Massanutten, north of Dayton and west of Harrisonburg, and west of Elkton, and, to a lesser extent, the Massanetta Springs area, the Port Republic area, east of Grottoes, north and east of Elkton, and the Bergton area. For more information on demographics, refer to Chapter 2: People and Place.

[Map 8.2 | Socio-demographics]

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- Limited English Proficiency: Individuals aged 5 or over that speak English less than “very well.”
  - Zero-Car Households: Households that do not own a vehicle.

<sup>4</sup> The U.S. census categorizes geographic areas by different boundaries to display demographic data through Census Tracts and Block Groups. Block Groups are statistical divisions of census tracts, are generally defined to contain between 600 and 3,000 people. Census tracts generally have a population size between 1,200 and 8,000 people.



## ROCKINGHAM COUNTY, VIRGINIA COMPREHENSIVE PLAN UPDATE

### Existing Transportation Network

Rockingham County has the second largest roadway network in the VDOT Staunton Construction District<sup>5</sup>. VDOT maintains all roads in coordination with the County. VDOT and the Federal Highway Administration (FHWA) coordinate I-81 maintenance. VDOT also maintains all roads in the towns of Dayton, Mount Crawford, and Timberville, while the City of Harrisonburg and the towns of Bridgewater, Broadway, Elkton, and Grottoes maintain their own roads.

#### Roadways

VDOT's Functional Classification System, shown on Map 8.3, classifies how a road functions by length, number of travel lanes, speed, and traffic volume from, and mainly includes Interstates, Arterials, Collectors, and Local Roads (see the Glossary for a full list of Functional Classification definitions). The County has 41.1 interstate miles, 158.6 major collector miles, 110.9 minor collector miles, 56 other principal arterial miles, and 96 minor arterial miles.

[Map 8.3 | Existing Transportation Network]

#### Roadway Maintenance and Pavement Conditions

VDOT rates pavement conditions of VDOT-maintained roads from Very Poor to Excellent, based on the pavement age and condition, every two years. According to 2022 VDOT pavement condition data, Rockingham County has the highest percentage of roadway pavement rated in either excellent or good condition (65% of roads) within the five-county CSPDC region, and the lowest percentage of roads rated in either poor or very poor condition (26% of roads).

Five percent (162 miles) of County roads are unpaved. The longest unpaved segment is an approximately 6-mile segment along Route 780 (Shaver Mill Road, Joes Creek Road, and Frog Hollow Road) from VA 42 west to Singers Glen. The densest network of unpaved roads is in the Singers Glen area between Little North Mountain and VA 42, with other areas of unpaved roads located in the Bergton area, Ottobine area, and short segments between Cross Keys Road and Elkton.

#### Rural Rustic Roads

The Rural Rustic Roads Program is administered by VDOT and assists with paving unpaved secondary roads. Localities can submit annual recommendations to VDOT for unpaved roads that qualify for paving. Eligibility for paving is based on Average Daily Traffic (ADT)<sup>6</sup> between 400 and 1,500, Six Year Improvement Plan (SYIP) priority, minimal anticipated traffic growth, and a rural rustic road resolution passed by the County in consultation with VDOT.

#### Scenic Byways

VDOT and the Virginia Department of Conservation and Recreation designate state scenic roads and byways, which are roads that have high aesthetic, natural, or cultural value. Although Rockingham County does not have any state byway designations, the County is home to two Virginia scenic road designations: an approximately 6-mile segment of VA 42 between the

<sup>5</sup> VDOT administers the state's roadways through nine districts. The Staunton Construction District includes 11 counties east of the Blue Ridge Mountains between Frederick County and Alleghany County.

<sup>6</sup> Average Daily Traffic (ADT) is defined as the volume of traffic passing a point or segment of a road, in both directions, during a period of time, divided by the number of days in the period and factored to represent an estimate of traffic volume for an average day of the year.



## ROCKINGHAM COUNTY, VIRGINIA COMPREHENSIVE PLAN UPDATE

Augusta County border and Dayton, and a half mile segment of VA 256 entering Grottoes. The County has one federal scenic byway designation on Skyline Drive, which is a National Scenic Byway and maintained by the Federal Highway Administration (FHWA).

### ***National Forest and National Park Roads***

The George Washington and Jefferson National Forest covers almost one-quarter of the County land area, which includes a 125-mile network of forest roads owned and maintained by the U.S. Forest Service. Shenandoah National Park borders eastern Rockingham County, and includes Skyline Drive, a 105-mile north-south National Parkway that is owned and maintained by the National Park Service. Skyline Drive provides vehicular and non-vehicular access to destinations in Rockingham County, and the main access to the National Park from the County is via US 33 and the Swift Run Gap entrance on the Rockingham County-Greene County border.

### ***Traffic Volume***

VDOT maintains ADT count data to assess congestion. Excluding I-81, the 2018 VDOT ADT<sup>7</sup> data indicates that the Stone Spring UDA has the highest traffic volumes, followed by the US 33 corridor between the Stone Spring UDA and Elkton, and the segment of VA 42 between Harrisonburg and Bridgewater. Approximately 73% of roads have less than 1,000 ADT, followed by 10% of roads having between 2,500 and 7,000 ADT. Only 2% of roads have ADT between 15,000 and 30,000.

### **[Map 8.4 | 2018 ADT]**

### ***Interstate and Freight Movement***

I-81 is the primary north-south truck route in the region, and over three-quarters of statewide truck<sup>8</sup> freight travels on I-81. The County's high concentration of agriculture, manufacturing, and distribution sectors generates a high volume of truck traffic. Rockingham County has 22 distribution centers, all located south of Harrisonburg within a one-mile radius of I-81. Many of the distribution centers are concentrated in the Pleasant Valley and Mount Crawford areas between Friedens Church Road and Harrisonburg. As a result, I-81 south of Harrisonburg in the County has the second highest truck traffic volumes in the VDOT Staunton Construction District.

I-81 averages 55,000 ADT in Rockingham County, with 25% of interstate ADT in the County being truck traffic. Truck traffic on US 11 and US 33 averages approximately 3-6% of ADT. Other roads with elevated truck traffic are primarily near Harrisonburg. South of Harrisonburg, roads with elevated levels of truck traffic include Early Road, Pleasants Drive, Pleasant Valley Road, Cottontail Road, Crowe Drive, Cecil Wampler Road, and Friedens Church Road between I-81 and Walton Way. Roads north of Harrisonburg include Buttermilk Creek Road, Gravels Road, and the southern end of Kratzer Road. Other roads with an elevated percentage of truck traffic are US 340 and Island Ford Road in the eastern part of the County, and VA 259 in the northwestern part of the County (see Map 8.5: Truck Traffic).

<sup>7</sup> VDOT Staunton Construction District Planning office noted that 2018 is the most current and accurate year for traffic volume data in Rockingham County due to unreliable data collection during the COVID-19 pandemic.

<sup>8</sup> For the purposes of this Plan, "truck" refers to tractor trailers.



## ROCKINGHAM COUNTY, VIRGINIA COMPREHENSIVE PLAN UPDATE

In response to interstate traffic and freight-movement congestion issues, the Commonwealth Transportation Board (CTB) – a 17-member, governor-appointed board that establishes transportation policy and funding recommendations in the Commonwealth – studied the entire length of the I-81 corridor and approved the I-81 Corridor Improvement Plan in 2018. The plan identified a \$2 billion package of projects for the corridor. \$2 billion in projects. In Harrisonburg, the I-81 program will widen existing lanes and add one additional lane northbound and southbound from one mile south of the Exit 243 (US 11) interchange to one mile north of the exit 247 (US 33[East Market Street]) interchange. Construction is expected to begin in 2024.

### *Truck Parking*

Rockingham County has several large privately owned overnight truck parking facilities, and no publicly owned facilities. The County has two major, privately-owned travel centers that provide overnight truck parking: The Pilot Travel Center at I-81 Exit 251 (100 spaces), and the Shell/McDonald's at I-81 Exit 240 (29 spaces). The Harrisonburg Truck Stop at Exit 243 has 250 parking spots, and is the only privately-owned travel center in Harrisonburg. The closest public truck parking areas are in Shenandoah County, which provide a combined 40 truck-parking spaces, and two public rest areas in Augusta County which provide a combined 37 spaces.

[Map 8.5 | Truck Traffic]

## Bridges and Culverts

VDOT maintains and rates all County bridges and culvert conditions to address maintenance issues and prioritize repairs and replacements. The VDOT condition ratings are based on the condition of the deck, substructure, and superstructure on a scale between 0 to 9, with 8 to 9 being "good," 5 to 7 being "fair," and 0 to 4 being "poor." According to 2022 VDOT data, 53% (348 bridges) of bridges are rated fair, 39% (254 bridges) are rated good, and 7% (48 bridges) are rated poor. The County has 389 culverts, and none are rated poor.

## Multimodal Infrastructure

### *Bicycle and Pedestrian Facilities*

Rockingham County does not have a connected bicycle and pedestrian network due to the large geographic area and rural character of the County. The County's large network of two-lane roadways are often characterized by narrow shoulder widths and high speed limits which create unsafe walking and biking conditions. However, many of the County's rural roads have low traffic volume that provide safer walking and biking conditions..

The County has bicycle and pedestrian facilities on the following roadways:

- Port Republic Road Shared Use Path: A 10' paved path on the west side, extending from Neff Avenue in Harrisonburg to the east of Boyers Road
- Port Republic Road Sidewalk on the east side from Harrisonburg to east of Boyers Road.
- Stone Spring Road Bicycle Lanes
- VA 42 Bicycle and Buggy Lanes from Bridgewater to north of Grace Chapel Road
- VA 42 Bicycle Lanes from north end of Windmill Circle to Broadway town limits- 7' wide
- Belmont Area Sidewalk, a .49-mile sidewalk, on US 33 and Erickson Avenue links Mountain View Elementary to Flint Avenue
- New sidewalks in new residential development complexes such as The Reserve at Stone Port



## ROCKINGHAM COUNTY, VIRGINIA COMPREHENSIVE PLAN UPDATE

One funded, but not-yet-constructed, project is the US 11 North Valley Pike Sidewalk project, which is for the construction of a five-foot sidewalk on the west side of North Valley Pike, from Mount Clinton Pike in the City of Harrisonburg to Jewell Street, which will establish a pedestrian connection to an underserved area north of Harrisonburg. Additionally, short segments on Stone Spring Road, and a shared use path on Boyers Road, are being built as development occurs.

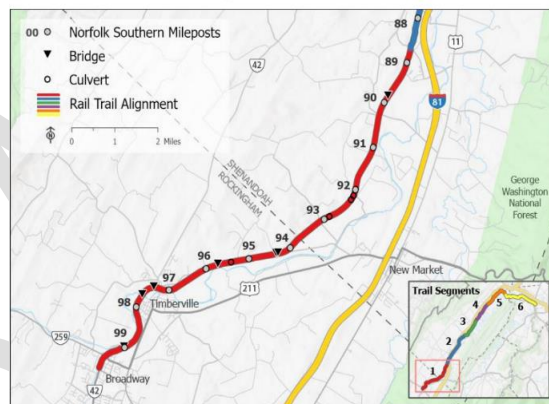
The 2016 Rockingham Bicycle and Pedestrian Plan identifies general recommendations and specific potential projects throughout the County.

### **Recreation Facilities**

The Shenandoah Rail Trail is a proposed 50-mile multi-use trail between Broadway and Front Royal (in Warren County) supported by a partnership of public, private, and non-profit organizations. The trail, which will connect Broadway and Timberville would not only provide outdoor recreation, but would support local economic development. VDOT conducted the Shenandoah Valley Rail Trail Feasibility study, and a public survey and meetings indicate broad public support for the project. The trail would be the first rail trail in Rockingham County and the region.

Two bridges are present along the Broadway-Timberville segment, including a 184' bridge crossing the North Fork of the Shenandoah River.

Shenandoah Rail Trail Segment in Rockingham County  
(Source: VDOT Shenandoah Rail Trail Masterplan)



### **Public Transit and Commuter Services**

#### **Harrisonburg Department of Public Transportation**

The Harrisonburg Department of Public Transportation (HDPT) provides public fixed-route and on-demand paratransit<sup>9</sup> transportation services focused on City and James Madison University (JMU) routes. HDPT provides service in the County through the following:

- **City Routes:** Six routes operate year-round Monday through Saturday service focused on serving residential and commercial areas. City Routes 1, 2, and 6 extend into the County along Port Republic Road, Stone Spring Road, and to Sentara Rockingham Memorial Hospital.

<sup>9</sup> Paratransit is a type of transit service that is more flexible than conventional fixed-route transit. Paratransit typically serves individuals that have difficulty accessing transportation options and provides individual rides at the request of the passenger. Typically paratransit service includes minibuses equipped with wheelchair lifts to assist with access.



## ROCKINGHAM COUNTY, VIRGINIA COMPREHENSIVE PLAN UPDATE

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- Bridgewater/Dayton Shuttle: This shuttle operates Tuesdays and Thursdays and provides service between Harrisonburg, Dayton, and Bridgewater. The shuttle runs in the morning, mid-day, and on-demand in the early evening.
- ADA paratransit service: HDPT provides federally-mandated paratransit service within ¾-mile of the public transit routes that travel into the County.

HDPT's 2018 Transit Development Plan (TDP) outlines the Department's transit needs, services and improvements, and funding over a six-year period. The Virginia Department of Rail and Public Transportation (DRPT) requires large public transportation agencies to develop Transit Strategic Plans (TSPs) to replace the previously required TDPs. HDPT is developing a TSP, which is scheduled for adoption in mid- 2024.

### ***Regional Transit***

Blue Ridge Intercity Transit Express (BRITE), which is managed by the Central Shenandoah Planning District Commission CSPDC and has an administration, operations, and maintenance facility based in Fishersville, Virginia, provides a fixed-route bus transit service between Staunton, Blue Ridge Community College, Harrisonburg, and destinations in Rockingham County. BRITE's Blue Ridge Community College Shuttle connection runs Monday through Friday between 7:00 a.m. and 6:00 p.m. and stops at the Dayton area Walmart and the Towns of Dayton, Bridgewater, and Mount Crawford.

### ***Intercity Bus Service***

The Virginia Breeze, established in 2017 by the Virginia Department of Rail and Public Transportation (DRPT) through the private bus service, Megabus, is an intercity bus service connecting Blacksburg with Union Station in Washington, D.C. The daily route travels through Rockingham County and includes one stop in Harrisonburg. The service is oriented to college students from Virginia Tech and James Madison University traveling the I-81 corridor.

### ***On-Demand Commuter Services***

Several non-profit commuter services provide on-demand paratransit mobility services for underserved demographics such as senior, disabled, and low-income individuals.

- Harrisonburg-Rockingham Social Services: Provides transportation to health services for aging and low-income adults.
- Pleasant View: Provides transportation for individuals with developmental and intellectual disabilities for clients of Pleasant View, which is an assisted living service.
- Valley Program for Aging Services (VPAS): Provides aging adults, who are no longer able to drive, with transportation to essential services like grocery shopping, medical appointments, and banking.
- Way to Go: Provides low-income workers in Rockingham County with a variety of transportation services such as assisting with the payment of DMV vehicle fees, payments for monthly car loans, and donating used vehicles for individuals trying to become more self-sufficient.

### ***Rideshare and Park and Ride Lots***

RideShare is a regional carpool coordination program provided by the CSPDC. The service connects two or more people seeking to carpool in the Shenandoah Valley and Charlottesville areas. Users can download the Rideshare application on their phones and connect with other riders in the region. The service utilizes park and ride lots for meeting locations.





## ROCKINGHAM COUNTY, VIRGINIA COMPREHENSIVE PLAN UPDATE

VDOT owns and maintains six park and ride lots in the County (see **Table 8.1**). In coordination with VDOT, the CSPDC monitors lot conditions every quarter based on pavement conditions and features such as lighting and cleanliness on a scale of “good,” “fair,” or “poor.” In August 2023, all lots were rated “good.” The Mount Crawford lot is a 0.86-acre site with 33 parking spaces, and is the largest park and ride lot in the County by number of spaces. Funded improvements will add 69 parking spaces, for a total of 102 spaces, and include a bus turn-around and stop, safety lighting, and EV charging conduit.

**Table 8.1 | Park and Ride Lots in Rockingham County**

Name	Location	Number of Spaces/Handicap	Surface	Lighting	Trash
Bergton	Northwest corner of intersection of Brocks Gap Road & Bergton Road	30/0	Asphalt	Yes	No
Elkton – Blue and Gold	535" east of intersection of Blue and Gold Drive with South Stuart Avenue	13/0	Gravel	No	No
Elkton - Tanyard Road	Northeast corner of intersection of Spotswood Trail (US 33) & Tanyard Bridge Road	7/1	Gravel	No	Yes
Massanutten	Southwest corner of intersection of Spotswood Trail (US 33) & Mt. Olivet Church Road	19/3	Asphalt	Yes	No
Mauzy	142 Mayland Road, Broadway	31/2	Asphalt	Yes	Yes
Mount Crawford	South side of Friedens Church Road, approximately 1,000' west of I-81	33/0	Gravel/Asphalt	Yes	Yes

## Rail and Air

### *Passenger Rail*

Rockingham County is not served by passenger rail service. The closest passenger rail service is available at the Staunton Amtrak station three times a week and connects to New York City, Washington D.C., and Chicago. Daily Amtrak service is available in Charlottesville.



## ROCKINGHAM COUNTY, VIRGINIA COMPREHENSIVE PLAN UPDATE

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### *Freight Rail Service*

In the United States, railroads are designated as Class I, Class II, or Class III according to size criteria. Class I railroads earn at least \$250 million in annual operating revenue, Class II railroads earn between 20 and \$250 million, and Class III railroads earn \$20 million or less. Norfolk Southern owns and operates Class I freight rail service along the western front of the Blue Ridge Mountains roughly paralleling US 340. The Class 1 route is part of Norfolk Southern's Cresent Corridor, which generally parallels I-81 in Virginia, connects to the Virginia Inland Port in Front Royal, and spans 13 states.

The Chesapeake Western Branch of Norfolk Southern is a Class III freight rail service, which provides service from Elkton to Harrisonburg, and from Broadway to Pleasant Valley. The Shenandoah Valley Railroad owns and operates Class III rail between Pleasant Valley and Staunton, and interchanges with Norfolk Southern on the north end of the line. There are no Class II railroads in the County.

### *Airports*

The Shenandoah Valley Regional Airport (SHD) in Weyers Cave in Augusta County approximately 15 miles south of Harrisonburg is the closest commercial air service. The airport provides services through United Express Airlines and direct access to Chicago O'Hare International Airport (ORD). The Charlottesville Albemarle Airport (CHO) is approximately 45 miles east of Harrisonburg and has daily non-stop flights to major destinations, and the Dulles International Airport is approximately 120 miles north of Harrisonburg.

According to 2023 Federal Aviation Administration (FAA) data, six private airports are located in the County. Bridgewater Air Park located at Dynamic Aviation on Airport Road is the largest private airport in the County.

## **Growth Trends and Projections**

Transportation planning decisions and infrastructure investments must be based on an understanding of the growth and development trends that could impact the future transportation network. This section highlights how statewide and local trends affecting population growth, economic development, land use patterns, and commuter characteristics are expected to change over the next 20 years. The trends inform the identification of the County's transportation needs, projects, and recommendations in subsequent sections of this chapter.

### **Statewide Trends**

VTrans, the statewide transportation plan, identifies four long-term planning macrotrends<sup>10</sup> that are anticipated to have a significant impact on the statewide transportation network based on low, medium, and high-impact scenarios: Climate, Technological Changes, Consumption Patterns, and Socio-Demographic changes. The Climate macrotrend assesses flood risk

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<sup>10</sup> The VTrans macrotrends include significant uncertainty, and are intended for planning purposes only. Each trend should be monitored and reassessed to evaluate the potential impact on Rockingham County's transportation network.



## ROCKINGHAM COUNTY, VIRGINIA COMPREHENSIVE PLAN UPDATE

throughout the Commonwealth, and the largest impact is mainly along coastal areas.<sup>11</sup> However, the remaining three macro trends more directly impact Rockingham County. In general, each macro trend assumes that more people will be working and shopping from home, and the demand for shared mobility services such as automated vehicles and transit will increase.

### *Technological Change*

VTrans notes that technological change is being shaped by the increasing adoption of connected and autonomous vehicles, the adoption of electric vehicles, and the growth in shared mobility. By 2045, VTrans predicts that vehicles with some level of autonomous capability will constitute 43% of all vehicles in Virginia, and electric vehicles (EVs) will constitute most new vehicles.

Currently, Rockingham County EV ownership is low, the County does not have any public EV charging stations, and EV charging facilities are primarily located at gas stations. The County had 225 registered EVs based on 2022 Virginia DMV data, which is similar to other rural counties in the region such as Augusta County, which had 151 registered EVs, but significantly lower than the nearly 1,000 registered EVs in Albemarle County, and 1.2 million in Fairfax County. It remains unclear whether Rockingham County's EV adoption rates will reflect trends observed in more urban regions of the state.

### *Consumption Patterns*

Changes in consumption patterns are being shaped by growth in e-commerce and online shopping, greater automation of production and services from artificial intelligence and other technologies, and the automation of mail delivery through drones, which will likely impact how often people drive to purchase goods and services in-person. The VTrans medium impact scenario estimates that drone delivery could constitute 13% of all product delivery in 2045.

### *Socio-demographic Changes*

Socio-demographic changes are being shaped by the growth of the professional services industry, increased remote working, growth in the senior 65+ population, and a long-term trend of population and employment being more concentrated in urban areas, each of which has a potential multi-faceted impact on future transportation patterns and needs.

## Population and Employment Growth

Changes in population and employment affect future transportation needs. Rockingham County's population growth projections are consistent with the County's historic trend of steady growth. Weldon Cooper Center for Public Service estimates that the population will increase from 82,346 people in 2020 to 104,481 people in 2050, which is an increase of 0.9% annually (see Chapter 2: People and Place). The City of Harrisonburg and each of the seven towns within the County are projecting a similar population growth rate. Moreover, the Harrisonburg-Rockingham Metropolitan Planning Organization (HRMPO) Long Range Transportation Plan determined a similar growth rate for the County within the MPO area of 0.9% annual population growth.

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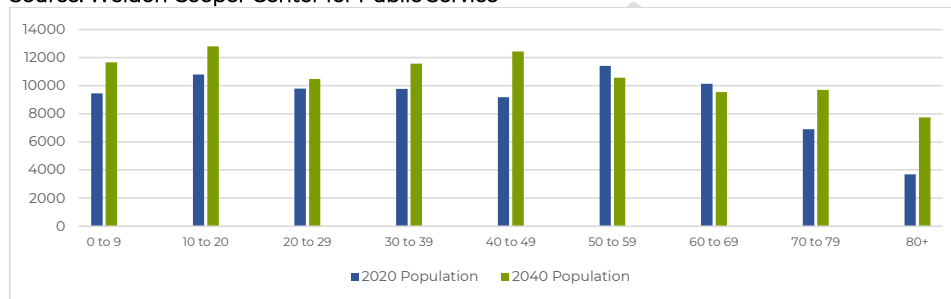
<sup>11</sup> The Climate macro trend assesses flood risk throughout the Commonwealth, and the largest impact is mainly along coastal areas. The Central Shenandoah region has 615 inland riverine (rivers and streams) flooding miles, which is one of the lowest numbers in the State.



## ROCKINGHAM COUNTY, VIRGINIA COMPREHENSIVE PLAN UPDATE

Underserved populations have unique transportation needs that include more difficulty accessing vehicular travel, and a greater reliance on walking, transit, and alternative modes of travel. As mentioned in the existing conditions section of this chapter, Rockingham County's population continues to age (see Figure 8.1). The percentage of elderly adults is projected to increase from 19% in 2020, to 23% in 2040, with the percentage of adults over 80 years old more than doubling over that time period. This projection is also consistent with the VTrans scenario which projects a statewide increase in the senior population.

**Figure 8.1: Projected Population Change by Age Group Between 2020 and 2040**  
Source: Weldon Cooper Center for Public Service



The County's future land use map in Chapter 7, Land Use, indicates that future significant new employment growth will occur in the commercial and industrial areas north and south of Harrisonburg. Chapter 5, Economy, details the County's major future economic development sites, which include the federal Opportunities Zones sites in the Pleasant Valley area and the Keezletown and Melrose area, and the Virginia Economic Development Partnership Sites such as Innovation Village @ Rockingham north of Harrisonburg.

More generally, the HRMPO LRTP indicated that based on 2018 data, 51% of the County's total number of jobs were within the HRMPO boundary around Harrisonburg, Dayton, Bridgewater, and Mount Crawford, which is an area that constitutes less than 10% of the total County land area.

### Commuting Characteristics

Most Rockingham County residents are car-dependent and lack alternative transportation options (see Chapter 2: People and Place). The County has a higher rate of commuters driving alone, and a lower rate of residents working from home compared to statewide averages (see Table 8.2).

The County's car-centric commuting patterns have remained consistent since the Census began tracking commuting data in 1970. However, the percentage of County residents working from home increased from 3.1% in 2019 to 6.5% in 2021 during the COVID-19 pandemic (see Chapter 5: Economy). As a result, it is reasonable to estimate that remote working rates will remain at post-COVID rates or continue to increase, which may have long-term impacts on future commuting patterns in the County.



## ROCKINGHAM COUNTY, VIRGINIA COMPREHENSIVE PLAN UPDATE

Table 8.2 | Commuting Characteristics, 2021 American Community Survey Data

Locality	Drove Alone	Carpooled	Used Public Transportation	Walked to Work	Other Means (taxi, motorcycle, etc.)	Worked from Home
Rockingham County	79.5%	9.9%	0.2%	3.2%	0.9%	6.5%
Harrisonburg	72.5%	10.9%	1.1%	6.1%	3.2%	6.1%
Virginia	67.9%	8.0%	1.9%	2.2%	1.5%	18.2%

Chapter 2: People and Place further describes the County's commuting patterns, which is defined by a majority of County's residents working either in the County or the City of Harrisonburg, which suggests an economy that relies heavily on the local population.

### Land Use and Future Development

County development is defined by rural and agricultural areas interspersed with low-to medium-density development around the City of Harrisonburg; the Towns of Bridgewater, Broadway, Dayton, Elkton, Grottoes, Mount Crawford, and Timberville; and the Village of McGaheysville and Massanutten Resort area. The County has designated the Stone Spring UDA and Urban Growth Areas (UGAs) for compact development to provide a distinction between urban and rural areas, and to protect agricultural operations and the County's rural character. The County has maintained a long-time goal for 80% of new housing development to be served by public water and sewer and be located in the Stone Spring UDA and the UGAs (see Chapter 7: Land Use).

New residential, commercial, and industrial development is likely to occur in areas with water and sewer service within the UGAs; community amenities such as public schools and recreational spaces; and along primary roads, major intersections, and interstate interchanges.

Rockingham County building permit data from 2018 to 2022 depicts that most residential and commercial construction growth occurred in the Stone Spring UDA with 480 new structures constructed. Other new development occurred in the UGA east of Harrisonburg, with other development activity within the County's other UGAs.

A notable planned development impacting the transportation network is the Great Eastern project in the Massanutten and McGaheysville area. The project totals approximately 400-acres along Resort Drive and includes a variety of commercial development and approximately 1,800 units consisting of a mix of residential, senior living, hotel, and timeshares. A VDOT Traffic Impact Analysis (TIA) notes that the projected future traffic generation would have a significant impact on the existing roadway network under no build conditions. However, proposed roadway improvements, including left turn lane improvements at US 33 and Resort Drive, would mitigate much of the potential congestion from the approved development.



## ROCKINGHAM COUNTY, VIRGINIA COMPREHENSIVE PLAN UPDATE

### Needs Assessment

This section identifies the County's main transportation needs. Needs were identified through a data-driven approach informed by reviewing the VTrans statewide transportation plan and other local and regional transportation planning studies such as the US 33 Arterial Management Plan; evaluating capacity issues related to VDOT traffic data and the HRMPO travel demand model; reviewing VDOT crash data and trends for fatalities and serious injuries; and reviewing gaps in the multi-modal network. The identified needs directly inform the recommended transportation projects in the next section.

This section addresses:

- Transportation Network Operating Needs (Capacity and Safety)
- Multi-modal Needs (Bicycle and Pedestrian, Transit, and Transportation Demand Management)
- Emerging Technology

### Transportation Network Operating Needs

#### *Capacity Needs*

Future roadway capacity needs were identified using the HRMPO Travel Demand Model for County areas within the MPO, and VDOT ADT data and Level of Service (LOS) data for areas of the County outside of the MPO. The Travel Demand Model is tailored to the HRMPO region using future growth assumptions developed by the HRMPO Technical Advisory Committee, while the VDOT ADT and LOS are more general projections based on historic linear traffic volume growth in the County.

#### *Harrisonburg-Rockingham Area*

The HRMPO Technical Advisory Committee (TAC), which is comprised of members from each jurisdiction in the MPO, developed a travel demand model for the MPO region to identify future transportation needs. A Travel Demand Model is a computer-based forecasting tool used to estimate future travel demand on the transportation network based on a set of transportation-related assumptions. The TAC identified population and employment assumptions based on Weldon Cooper Center for Public Service, Woods and Poole, and U.S. Census data to determine where future growth is expected to occur to estimate daily trip generation and congestion for the 2015 base year scenario and 2045 future year scenario.

The Travel Demand Model results for the 2015 base year data scenario identified which roadway segments have a daily volume of traffic that equals or exceeds roadway daily capacity based on a volume-to-capacity (V/C) ratio. A V/C ratio measures the amount of traffic on a roadway relative to the amount of traffic the roadway was designed to accommodate<sup>12</sup>. According to the Travel Demand Model, no roadways in the County are over capacity; however, the roads in Table 1 are indicated as experiencing periodic congestion and should be monitored in the future.

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<sup>12</sup> V/C is a measurement of the operating capacity of a roadway where the number of vehicles traveling on a roadway is divided by the number of vehicles that could theoretically travel on a roadway when at capacity. Roadways with a V/C ratio between 0.8 – 1.0 are considered congested, and roadways with a V/C ratio great than 1.0 are considered over capacity.



## ROCKINGHAM COUNTY, VIRGINIA COMPREHENSIVE PLAN UPDATE

**Table 8.3 | Rockingham County Roads Congested, 2015 Base Year Scenario based on the Travel Demand Model**

Source: HRMPO 2045 LRTP

Location	Area	Functional Classification
Dinkel Avenue from the Mount Crawford Western Town Limit to US 11	Mount Crawford	Other Principal Arterial
Smithland Road from Old Furnace Road to US 11	Harrisonburg and North of City	Minor Collector
Cecil Wampler Road to Pleasant Valley Road	South of Harrisonburg	Minor Collector
US 33 at the intersection of Erickson Avenue	West of Harrisonburg	Other Principal Arterial
Reservoir Street from Stone Spring Road to Harrisonburg City Limit	Stone Spring UDA	Minor Arterial

The Travel Demand Model also analyzed the future transportation network in 2045 based on future population and employment assumptions, and considers the existing transportation facilities and funded, but not yet constructed, transportation projects that address congestion. The model also assumes that no other transportation projects addressing congestion will be constructed over the next 25 years other than the projects that are already funded.

The 2045 scenario depicts an increase in segments operating at or over capacity compared to 2015 (see Table 8.4).

**Table 8.4 | Rockingham County Roads within the MPO that May Be Over-Capacity in 2045 Based on the Travel Demand Model**

Source: HRMPO 2045 LRTP

Location	Area	Functional Classification
Smithland Road from Old Furnace Road to US 11	Harrisonburg and North of City	Minor Collector
I-81 North from Exit 251 to the MPO Boundary	North of Harrisonburg	Interstate
Cecil Wampler Road, between I-81 and US 11	South of Harrisonburg	Minor Collector
Dinkel Avenue from Mount Crawford Avenue to US 11	Mount Crawford	Other Principal Arterial
US 33 from Harrisonburg Eastern City Limit to Stone Spring Road	Stone Spring UDA	Other Principal Arterial
Massanetta Springs Road from Forest Oaks Lane to US 33	Stone Spring UDA	Major Collector
Port Republic Road from Boyers Road to Osceola Springs Road	Stone Spring UDA	Minor Arterial



## ROCKINGHAM COUNTY, VIRGINIA COMPREHENSIVE PLAN UPDATE

Location	Area	Functional Classification
Ridgedale Road from M and N Drive to Stone Spring Road	Stone Spring UDA	Major Collector

### Other County Areas

In addition to travel demand modeling, which provides a more calibrated location-specific analysis that includes population and employment assumptions, VDOT also utilizes ADT and Level of Service (LOS) projections to provide a general baseline and approximation of future transportation network congestion. Both ADT and LOS forecast traffic volumes using historic traffic counts and historic linear growth rates.

Based on 2045 ADT, notable roads projected to experience growth are VA 42 north of Bridgewater, VA 257 (Friedens Church Road/Dinkel Avenue), US 11 between Harrisonburg and Mount Crawford, segments in the Stone Spring UDA including Stone Spring, Cross Keys, and Port Republic Roads, US 33 from Harrisonburg to Massanutten, and US 340 north of Elkton to the Page County line (see Map 8.6).

### Map 8.6 | ADT

LOS measures roadway congestion based on whether travel demand exceeds roadway capacity on a scale from A (best) to F (worst). Roads with a LOS A are characterized as having free-flowing traffic with no peak-period travel delays, roads with LOS C have “stable flow” (the baseline target for most urban and rural roadways, and roads with a LOS F experience major traffic congestion and extended travel delays.

VDOT uses past traffic volume trends to predict future year LOS based on no future improvements to the transportation network. VDOT 2019 LOS data indicates that no roads are rated F. One segment is rated E, which is US 33 from Harrisonburg’s western City Limit to Muddy Creek Road in Hinton. The VDOT 2045 LOS estimates indicate even with 30% or more vehicles on the road, the County’s existing roadway network has sufficient excess capacity to accommodate the additional traffic without a reduction in LOS. Most major roadways are projected to maintain the existing LOS.

The LOS data projects that ten segments will decrease in LOS between 2019 and 2045. Dinkel Avenue from US 11 to Old Bridgewater Road is the only segment that decreases in LOS by two letter rankings, from C in 2019, to E in 2045 (see Table 8.5 and Map 8.7).

**Table 8.5 | Declining Level of Service, 2045**

Segment	Area	2019 LOS	LOS 2045
VA 259 from US 11 to Phillips Store/Wampler Road	Broadway	C	D
McGaheysville Road from US 33 to Slate Road/South Montevideo Circle	McGaheysville	C	D
Island Ford Road from McGaheysville Road to White Rose Road	McGaheysville	C	D
US 340 from Island Ford Road to Captain Yancey Road	Rocky Bar	C	D
Port Republic Road from Cross Keys Road to Goods Mill Road	Cross Keys	C	D





## ROCKINGHAM COUNTY, VIRGINIA COMPREHENSIVE PLAN UPDATE

Segment	Area	2019 LOS	LOS 2045
Port Republic Road from South River Road to Lawyer Road	Port Republic	C	D

### Map 8.7 | LOS

#### Freight Capacity

Based on the existing freight volume data in the existing conditions section of this chapter, most of the County's freight traffic occurs within the HRMPO region on roadways around Harrisonburg. The HRMPO Travel Demand Model conducted an analysis of existing freight conditions and 2045 future year freight conditions to assess which roadways may have freight-specific congestion issues.

The Travel Demand Model estimated future truck traffic congestion based on truck traffic volume, roadway V/C Ratio, and the proximity of a roadway to freight-generating industrial and commercial land uses such as manufacturing and distribution centers. As a result, the Transportation Demand Model identified three segments in Rockingham County that are projected to have congestion issues specifically related to the movement of trucks and freight (see Table 8.6).

**Table 8.6 | Road Segments that May Experience Freight-specific Congestion Issues in Rockingham County in 2045**Source: 2045 HRMPO LRTP

Location	Area	Functional Classification
Port Republic Road from Boyers Road to Osceola Springs Road	Stone Spring UDA	Minor Arterial
Ridgedale Road from M and N Drive to Stone Spring Road	Stone Spring UDA	Major Collector
Dinkel Avenue from Mount Crawford Avenue to Old Bridgewater Road	Mount Crawford	Other Principal Arterial

In addition to the freight specific congestion issues, the areas north and south of Harrisonburg have truck traffic needs due to the concentration of industrial and commercial uses, proximity of I-81, and economic development importance of establishing an interconnected network for trucks to access freight-intensive land uses and the interstate (see Chapter 5: Economy for the locations of major economic development sites). The County will need to evaluate future improvements along US 11 between Harrisonburg and Exit 251 and monitor the efficacy of the funded 4-lane median with bike lanes improvements to US 11 between Harrisonburg and Mt. Crawford to determine if they improve safety in the corridor.

According to a 2022 VDOT Transportation & Mobility Planning Division Study, Rockingham County needs approximately 250 additional parking spots to meet current truck parking demand. While nearby public facilities may be able to expand, it is likely that significant expansion of private capacity will be necessary to meet demand in Rockingham County.

Finally, while other roads in the County have a high level of truck traffic volume such as Buttermilk Creek Road and Kratzer Road north of Harrisonburg, most of these roads have an overall low traffic volume, and any additional increase in truck traffic volume within the next 20 years should not affect overall freight



## ROCKINGHAM COUNTY, VIRGINIA COMPREHENSIVE PLAN UPDATE

transport capacity. Nonetheless, the HRMPO will continue to monitor roadways within the MPO that have 3% or more truck traffic for future congestion issues, and the County will in general monitor future truck traffic issues.

### Safety

VTrans identifies safety deficiencies based on VDOT crash data, which is updated regularly and accessible to the public via [VDOT's Crash Analysis Tool](#) website. Based on VDOT crash data, the County's fatal injury crashes have been increasing since 2017, which reflects similar state and national trends for fatal injuries. In 2017 and 2018, the number of fatal crashes in the County averaged 8.5; however, since 2019, the average number of fatal crashes has increased to 13.75 crashes annually.

VDOT uses the Potential for Safety Improvement (PSI) screening measure to identify and rank locations with higher-than-expected crashes based on crash rate frequency at an intersection or along a segment, and crash severity. Based on 2022 VDOT PSI data, the County has 12 PSI intersections, and 22 PSI segments:

Table 8.7 | PSI Intersections and Segments in Rockingham County

Number of PSI Locations	Location	Area
6 PSI Intersections	US-33	Between Harrisonburg and Elkton
1 PSI Intersection, 2 PSI Segments	Port Republic Road	Between Cross Keys Road and Stone Spring Road
1 PSI Intersection, 3 PSI Segments	VA-259	Between Mauzy and the Town of Broadway
2 PSI Segments	I-81	Near exit 251 north of Harrisonburg

### Multi-Modal Needs

#### *Bicycle and Pedestrian*

Rockingham County has limited sidewalk and bicycle infrastructure. The multi-modal network within the Stone Spring UDA and other Urban Growth Areas is incomplete or disconnected, which makes it difficult for residents and shoppers to safely travel by walking or biking in the more urban areas, whether for transportation or recreation.

The Rockingham County Bicycle and Pedestrian Plan identifies a comprehensive list of regional non-motorized transportation needs and projects to address safety and connectivity. These improvements align with corridors that VDOT identifies in its [Pedestrian Safety Action Plan](#)<sup>13</sup>. A total of 56 projects are identified, and County-wide recommendations include marked crosswalks, pedestrian signals, traffic signal detection, curb-cuts and ADA compliance reviews, and increased bicycle parking.

<sup>13</sup> In response to the continuing increase in pedestrian fatality rates, the VDOT Traffic Engineering Division completed an inaugural statewide Pedestrian Safety Action Plan (PSAP) in early 2018. This report documents the process VDOT followed to complete the PSAP, considers ways to improve pedestrian safety, and ultimately reduce pedestrian fatalities throughout the Commonwealth



## ROCKINGHAM COUNTY, VIRGINIA COMPREHENSIVE PLAN UPDATE

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While the County's large network of rural, low-traffic volume roadways support recreational bicycling, overall, the County lacks formal recreational pedestrian and bicycle facilities such as trails and greenways that connect to points of interest like Towns, parks, and outdoor assets. The Bicycle and Pedestrian Plan states the County has "an unmet desire for off-road facilities that provide both longer distance connections between municipalities, as well as shorter connections between local destinations, such as neighborhoods and parks." The County identified three priority focus areas for future improvements:

- Belmont area to the western Harrisonburg City Limit;
- US 33 corridor between Harrisonburg and Massanutten; and,
- Cooks Creek Greenway.

Additionally, the Bicycle and Pedestrian Plan identifies three different projects for potential buggy/bicycle lanes, each connecting to different parts of VA 42 between Dayton and Bridgewater. The County will continue to monitor buggy activity, and incorporate buggy lanes into new development, as appropriate.

Opportunities for other recreational connections have emerged since the completion of the County's Bicycle and Pedestrian Plan, such as connecting the Western Slope Trails system to points of interest in the Keezletown and Penn Laird areas, and the Shenandoah Rail Trail in the Towns of Broadway and Timberville.

### Transit

Supporting a public transit system and future transit connections is challenging due to the County's large geographic area and rural landscape. The Harrisonburg Department of Public Transportation (HDPT) Transit Strategic Plan identifies transit needs for transit routes into Rockingham County. HDPT currently identifies the following County transit needs:

- Improve service to university students and transit-dependent populations not met with fixed-route transit service in the Stone Spring UDA, especially along Port Republic Road and Reservoir Road;
- Continue transit service to Sentara Rockingham Memorial Hospital in the Stone Spring UDA; and,
- Evaluate further paratransit service to accommodate senior populations in the County.

Demographic trends such as an increasingly older population and infrequent or non-existent transit service, indicate potential future deficiencies in the transportation system, and where future investments are most suitable.

### Transportation Demand Management Needs

Carpooling is the second most common mode of commuting behind driving alone, with nearly 10% of County residents sharing rides, according to U.S. Census data. Transportation Demand Management includes carpool, vanpool, or transit services for longer distance commuters. The CSPDC manages a regional Transportation Demand Management program in support of a statewide Department of Rail and Public Transportation (DRPT) program, and is developing a Commuter Assistance Program Strategic Plan (CAPSP) to identify regional needs for modes such as carpooling and the CSPDC's RideShare program. The needs identified in the CAPSP should be considered in future transportation planning.

### Statewide Needs



## ROCKINGHAM COUNTY, VIRGINIA COMPREHENSIVE PLAN UPDATE

The VTrans plan informs VDOT's major transportation priorities and investments. VTrans includes three main travel area types – Corridors of Statewide Significance (CoSS), Regional Networks (RNs), and Urban Development Areas (UDAs)<sup>14</sup> – to assist with coordinating statewide planning priorities with local transportation needs. Each travel area includes a different set of transportation needs which are used for determining grant funding eligibility from state funding sources, and directly inform project identification.

I-81 is a Corridor of Statewide Significance and eligible for the most needs, ranging from congestion, operations, to safety. Most County roads are designated Regional Networks, which indicate safety and congestion needs throughout the County. The Stone Spring UDA needs apply to every road within the UDA, and identify needs for safety, pedestrian, bicycle, transit facilities, capacity, operations, wayfinding, complete streets, and other needs.

VTrans does not reflect a need for pedestrian facilities in the County outside of the Stone Spring UDA, and bicycle access needs exclude the County UGAs near Broadway, Elkton, Massanutten, McGaheysville, and Timberville despite these areas identifying needs through the County's Bicycle and Pedestrian Plan, other transportation studies, and the Towns' Comprehensive Plans. The County will continue to evaluate multi-modal needs around growth areas to ensure needs are accurately reflected in statewide plans.

### Emerging Technology

Recent and ongoing transportation advancements including on-demand mobility services, electric vehicles, and automated vehicles could reshape the County's transportation system and commuting patterns in the next 20 years. Travel and commuting patterns could also change due to an increase in remote working, e-commerce, and the impact of artificial intelligence on the development of transportation technology, operations, and maintenance. The County will need to work with the City of Harrisonburg, each of the seven Towns located within the County, regional partners such as the HRMPO and CSPDC, and the private sector to proactively plan, assess, and implement new policies, ordinances, and technologies, as appropriate, in response to new technologies affecting the transportation network.

<sup>14</sup> VTrans travel market definitions:

- Corridors of Statewide Significance: An integrated, multimodal network of transportation facilities that connect major centers of activity within and through the Commonwealth and promote the movement of people and goods essential to the economic prosperity of the state. These corridors include highways, rail lines, seaports, and airport facilities.
- Regional Networks: Based on designated Metropolitan Planning Organizations (MPO) within the Commonwealth. If an MPO boundary includes only a portion of a county, the entire county will be included in the needs area.
- Urban Development Areas: Based on local designation of where growth is expected or encouraged to occur.



## **Recommended Transportation Projects and Studies**

The County identified ten potential transportation projects to address current and future transportation needs. Projects were included in the recommended project list because a project had already been evaluated in an existing plan, and the project 1) addressed a VTrans need, 2) addressed a need identified in this Comprehensive Plan, and 3) aligned with the County's transportation goals. The recommended projects are depicted in Map 8.9, and detailed in Table 8.7. Projects not meeting the criteria were placed on the Further Study List, which will be used as a reference for conducting future Rockingham County transportation studies. Eleven different projects are on the Further Study list (see Table 8.8).

Additionally, Code of Virginia requires that Comprehensive Plans include projects that are funded in the most recent VDOT Six Year Improvement Program (SYIP). The SYIP documents the transportation funding and projects approved by the Commonwealth Transportation Board (CTB) for over six fiscal years (see Table 8.9).

[Map 8.9 | Recommended Transportation Projects]

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## ROCKINGHAM COUNTY, VIRGINIA COMPREHENSIVE PLAN UPDATE

Table 8.8 | Recommended Transportation Projects

Note: Projects are not prioritized in any order

Project ID	Project Name	Area	Improvement Type	Project Description	2022 Cost Estimate
1	Garbers Church Road Improvements	West of Harrisonburg	Multi-modal connectivity, safety	Provide wide shoulders for bicycle and buggy accommodations and add turn lanes at appropriate locations from Erickson Avenue to VA 42.	\$2,500,000
2	Erickson Avenue Improvements	West of Harrisonburg	Multi-modal connectivity	Add bike lanes on both sides of US 33 to the Harrisonburg Western City Limit.	\$1,000,000
3	US 33 and Resort Drive Intersection Improvements	Massanutten	Safety, congestion	Alternative 1: addition of conventional southbound and eastbound turning lanes. Alternative 2) thru-cut.	Turn lanes: \$6,737,700; thru-cut: \$4,137,560
4	US 33 and McGaheysville Road Intersection Improvements	McGaheysville	Safety, congestion	Conventional turn lane improvements on McGaheysville Road.	\$2,680,470
5	US 33 and Island Ford Road Intersection Improvements	McGaheysville	Safety, congestion	Install a signalized partial RCUT; construct a northbound left-turn lane to support dual left turns from Island Ford Road.	\$11,520,991
6	VA 257 (Friedens Church Road) at I-81 Exit 240 Intersection Capacity Improvements	Mount Crawford	Congestion	Capacity enhancements to support land use changes in the vicinity of the interchange.	Cost forthcoming
7	US 33 at Stone Spring Road Turn Lane Improvements	Stone Spring	Congestion	Install an additional northbound turn lane on Stone Spring Road.	\$3,076,300



## ROCKINGHAM COUNTY, VIRGINIA COMPREHENSIVE PLAN UPDATE

Project ID	Project Name	Area	Improvement Type	Project Description	2022 Cost Estimate
8	Spotswood Trail Shared Use Path	Stone Spring	Multi-modal connectivity	Install a shared-use path on a 2.82-mile segment of US 33 between the Harrisonburg City Limit to west end of Penn Laird Drive (see County's Bicycle and Pedestrian Plan, project R-18).	Not available
9	US 33 Arterial Management Improvements	US 33 Corridor	Safety, congestion	Implement corridor-wide safety and operational improvements from the US 33 Arterial Management Plan, to include crossover modifications, updated signs and markings, and rumble strips.	\$11,000,000
10	Penn Laird Drive Shared Use Path	Stone Spring	Multi-modal connectivity	Install a shared-use path on a 1.13 mile segment of US33 from Penn Laird Drive to Penn Laird Drive (see County's Bicycle and Pedestrian Plan, project R-12).	Not Available

Table 8.8 | Proposed Projects for Further Study List  
Note: Projects are not prioritized in any order

ID	Study/Evaluation	Area	Description
1	Bridgewater Bypass (Don Litten Parkway) Improvements	Bridgewater	Evaluate solutions to potential future capacity deficiencies between US 11 and VA 42 north of Bridgewater
2	Dinkel Avenue Corridor Study	Bridgewater and Mount Crawford	Evaluate potential future corridor capacity, operational, and safety needs from VA 42 to I-81.



## ROCKINGHAM COUNTY, VIRGINIA COMPREHENSIVE PLAN UPDATE

ID	Study/Evaluation	Area	Description
3	Research Drive to Smithland Road Connection	North of Harrisonburg	Evaluate the feasibility and location of an urban minor arterial and add bicycle facilities.
4	Fire and Rescue Station 10 Entrance Evaluation	North of Harrisonburg	Evaluate alternate access points for Fire Station 10 near US 11, Technology Drive, and Veronesi Drive.
5	North Valley Pike Corridor Study	North of Harrisonburg, from Mount Clinton Pike to Gravels Road	Evaluate and make recommendations to improve efficiency for truck access to I-81, including greater accessibility for Innovation Village @ Rockingham, increased corridor safety, access management, bicycle and pedestrian facilities, and intersection improvements
6	Cecil Wampler Road to Oakwood Drive Improvements	South of Harrisonburg	Evaluate signal timing and truck traffic improvements from Cecil Wampler Road to Oakwood Drive and at the US 11 intersection. Evaluate the safety issues on the Cecil Wampler Road I-81 overpass to address issues of heavy trucks traveling the bridge.
7	Crowe Drive Extension	South of Harrisonburg	Study connectivity improvements to facilitate the movement of truck traffic from Cecil Wampler Road to Friedens Church Road via Crowe Drive and Walton Way at the intersection of Friedens Church Road.
8	Switchboard Road Improvements	West of Harrisonburg	Evaluate solutions to safety deficiencies between US 33 and Mount Clinton Pike.
9	Mount Clinton Pike Improvements	West of Harrisonburg	Evaluate solutions to safety deficiencies, including vertical curves and lack of non-motorized facilities along Mount Clinton Pike.





## ROCKINGHAM COUNTY, VIRGINIA COMPREHENSIVE PLAN UPDATE

ID	Study/Evaluation	Area	Description
10	Peach Grove Avenue Extension	Stone Spring UDA	Evaluate feasibility and location of a new 4-lane roadway with wide shoulders and bicycle accommodations between Ridgedale/Greendale Road and Stone Spring Road.
11	Port Republic Road Corridor Improvements	Stone Spring UDA	Evaluate potential future capacity deficiencies and safety deficiencies from Boyers Road to intersection of Spaders Church Road and Shen Lake Drive.

Table 8.9 | 2023 – 2028 Six Year Improvement Program Projects (Projects Already Funded Over the Next Six Years)

Project ID	Project Name	Description	Cost
1	US 11 South Valley Pike Roadway Improvements	Widen US 11 from Cecil Wampler Road to just south of the Harrisonburg City Limit to a 4-lane divided highway with center median and wide shoulders for bicycle lanes. Install signals at the County Fairgrounds entrance and at Cecil Wampler Road synchronized with Oakwood Drive signal. Install turn lanes based on engineering analysis.	\$183,000
2	US 11 North Valley Pike Sidewalk	Install 5-ft sidewalks and footbridge between Mount Clinton Pike and Jewell Street.	\$3,165,272
3	US 33 & Indian Trail Road (Rt. 620) turn lanes	Extend the US 33 eastbound left turn lane and install a right turn lane on Indian Trail Road (Rt. 620).	\$452,000
4	Smithland Road Shoulder Widening	Widen Smithland Road to add 4-ft shoulders on both sides from the Harrisonburg City limits to US 11, and add a right turn lane onto US 11.	\$3,227,000



## ROCKINGHAM COUNTY, VIRGINIA COMPREHENSIVE PLAN UPDATE

Project ID	Project Name	Description	Cost
5	US 33 Replace bridges over NSRR	Replace the bridges without added capacity.	\$3,689,000
6	Mount Crawford Park and Ride lot improvements	Improve existing Park and Ride by adding 32 additional spaces. Add a bus stop and shelter, lighting, bike racks, and an electric vehicle charging station. Stormwater BMP expansion.	\$2,725,000
7	Oakwood Drive Improvements	Improve to 2-lane rural collector from US-11 to Bridgewater Town limits. Include shared use path.	10,500,000
8	Rawley Springs Road (Rt 847) Improvements	Improve ~1,200' of existing Rawley Springs Road (Rt 847) by repaving to bring up to current standards.	\$169,256
9	Captain Yancey Road (Rt 642) Turn Lane at US 340	Construct 200' right-turn lane and 200' taper on Captain Yancey Road (Rt 642) onto US-340 and widen existing railroad crossing to alleviate congestion entering and existing the Merck & Co. Inc.	\$1,500,000
10	Blazer Drive (Rt 9563)- Railroad & Highway Crossing	. Upgrade Railroad Flashing Lights and Gates and Widen Crossing	\$400,000
11	Island Ford Road (Rt 649)- Railroad Crossing.	Install Railroad Flashing Lights and Gates w Interconnection	\$310,000
12	South East Side Highway (US 340) and Island Ford Road (Rt 649) Traffic Signal -	Traffic signal installation for traffic signal installation.	\$927,500



## ROCKINGHAM COUNTY, VIRGINIA COMPREHENSIVE PLAN UPDATE

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Project ID	Project Name	Description	Cost
13	VA 276 (Cross Keys Road) Left Turn Lanes at VA 253 (Port Republic Road)	Install left turn lanes on VA 276 (Cross Keys Road) at intersection with VA 253 (Port Republic Road)	\$2,826,000

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## ROCKINGHAM COUNTY, VIRGINIA COMPREHENSIVE PLAN UPDATE

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### GOAL, OBJECTIVES, AND STRATEGIES

VDOT owns all roads in Rockingham County, and the Department is responsible for maintaining the transportation network. The County works with VDOT when appropriate to identify transportation needs and plan transportation projects.

Goal Statement: Rockingham County prioritizes a safe and reliable transportation network for all people and modes of travel.

#### Prioritize Safety and Reliability

##### Objective 8.1 Prioritize safety and capacity improvements.

8.1.1 Work with VDOT to ensure future safety projects are based on documented needs identified in VTRANS, the US 33 Arterial Management Plan, and County transportation studies.

8.1.2 Work with VDOT to prioritize safety projects with conventional and innovative improvements.

8.1.3 Work with VDOT on improvements to areas with a high rate of fatal and serious injury crashes, and coordinate with any neighboring affected localities.

8.1.4 Work with VDOT to determine and address capacity needs.

##### Objective 8.2 Improve interstate interchanges.

8.2.1 Work with VDOT to identify safety and congestion improvements near and at I-81 interchanges.

8.2.2 Coordinate with developers to ensure I-81 improvements are integrated into development plans.

8.2.3 Work with VDOT and local and state emergency service providers on VDOT plans to relieve congestion on parallel roadways caused by I-81 incidents.

##### Objective 8.3 Apply access management standards.

8.3.1 Work with VDOT and developers to consolidate entrances along arterial and collector roadways, as appropriate.

8.3.2 Amend the Zoning Ordinance to require new development to include inter-parcel bicycle and pedestrian accommodations and road connections with that are dedicated to VDOT.

8.3.3 Continue to encourage VDOT's use of raised medians on arterials to restrict turning movements.

#### Promote Economic Development and Connectivity

##### 8.4 Support existing businesses and encourage new businesses through effective transportation policies and practices.

8.4.1 Locate new and expanding commercial and industrial uses where VDOT's transportation network can support it, and work with private developers to incorporate the County's transportation and land use policies.



## **ROCKINGHAM COUNTY, VIRGINIA COMPREHENSIVE PLAN UPDATE**

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8.4.2 Apply for grants that support VDOT's maintenance of safe and reliable freight network to provide freight access to commercial and industrial areas, particularly along I-81, in the County Urban Growth Areas, and in the Stone Spring UDA.

8.4.3 Assess how the County can further promote multi-modal transportation options that connect to outdoor recreation activities and destinations.

8.4.5 Coordinate the installation of electric vehicle charging station facilities with the private sector.

8.4.6 Continue to monitor and assess the impacts of emerging technologies and trends on the transportation network.

### **Coordinate Transportation and Land Use**

**8.5 Recommend transportation improvements in accordance with the County's Conceptual Land Use Maps and the Stone Spring UDA Plan.**

8.5.1 Review county ordinances to ensure transportation facilities constructed by private developers promote long term planning efforts and meet standards identified in County and VDOT plans and studies.

**8.6 Work with VDOT to preserve the existing rural transportation network.**

8.6.1 Work with VDOT to maintain and improve, where needed, safety on roadways for farm vehicles and farm equipment.

8.6.2 Review VDOT's annual unpaved road improvement recommendations to the Rural Rustic Road Program.

**8.7 Coordinate transportation projects with neighboring localities**

8.7.1 Work with localities located within the County to coordinate entrance corridor and gateway enhancements that include roadway improvements.

### **Maintain and Improve the Multi-modal Network**

**8.8 Improve bicycle, buggy, and pedestrian connectivity, safety, and access.**

8.8.1 Work with VDOT and developers to implement recommended future bicycle and pedestrian projects.

8.8.2 Promote the development of pedestrian and bicycle facilities in the growth areas.

8.8.3 Consider bicycle and pedestrian facilities such as shared-use paths or wide shoulders on both sides of any new or redeveloped arterial or collector road.

8.8.4 Continue to improve safety and connectivity of horse-drawn buggy facilities on County roads, particularly in the Dayton and Bridgewater areas.

**8.9 Evaluate transit connectivity and access.**

8.9.1 Evaluate transit needs between and among each of the seven incorporated Towns in the County, and consider the recommendations from the County's Transit Feasibility Study.



## ROCKINGHAM COUNTY, VIRGINIA COMPREHENSIVE PLAN UPDATE

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8.9.2 Evaluate recommendations in the Harrisonburg Department of Public Transportation's Transit Strategic Plan.

8.9.3 Continue to remain knowledgeable of the work of rural transit providers and the unique transportation needs they address for disadvantaged and underserved populations such as the elderly, low-income, and disabled.

8.9.4 Encourage the use of ridesharing alternatives such as carpooling, vanpooling, and VDOT's park-and-ride lots.

### **Proactively Address Existing and Future Transportation Needs**

**8.10 Continue to fully participate in local, regional, and state transportation planning efforts.**

8.10.1 Coordinate with the County's seven towns to ensure that transportation studies and projects address local and regional context and needs.

8.10.2 Work with VDOT to coordinate and implement the recommendations of transportation studies and plans .

8.10.3 Work with VDOT to incorporate the County's transportation goals and needs in the Six Year Improvement Program (SYIP) and VTrans.

**8.11 Prioritize public engagement for all people.**

8.11.1 Continue to provide all members of the public with the opportunity to participate and provide input in the transportation planning process.

8.11.2 Continue to inform the public about new transportation studies and projects as they develop.